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GEOMETRY.

406. Proposed by **DR. R. K. MORLEY**, University of Illinois.

Given the lengths of a pair of conjugate diameters of an ellipse and the angle between them; to construct (with ruler and compass) the axes of the ellipse, *i. e.*, find their lengths and the angles they make with the given diameters.

407. Proposed by **S. LEFSCHETZ, Ph. D.**, University of Nebraska.

To construct a right triangle knowing the sum of the sides of the right angle, and the sum of one of them plus the hypotenuse.

408. Proposed by **ELMER SCHUYLER**, Brooklyn, New York.

Given a point A on a circle and a chord of the circle; to draw a chord through A so that it shall be bisected by the given chord.

CALCULUS.

329. Proposed by **C. N. SCHMALL**, New York City.

Show that the general linear differential equation $\frac{d^ny}{dx^n}+P_1\frac{d^{n-1}y}{dx^{n-1}}+P_2\frac{d^{n-2}y}{dx^{n-2}}+\dots+P_{n-1}\frac{dy}{dx}+P_ny=V$, where P_1, P_2, P_3, ..., P_{n-1}, P_n, V are known functions of x (Edwards, *Integral Calculus*, p. 243), has a solution in the form $y=v_1\int v_2dx\int v_3dx\dots\int\frac{Vdx}{v_1v_2v_3\dots v_{n-1}v_n}$.

330. Proposed by **C. N. SCHMALL**, New York City.

X is a homogeneous function, in the nth degree, of x, y, z; Y is any function of u, v, w. If $ux=vy=wz=1+X$...(1), prove that (by Euler's Theorem),

$$x\frac{\partial Y}{\partial x}+y\frac{\partial Y}{\partial y}+z\frac{\partial Y}{\partial z}+\frac{n}{x}\frac{\partial Y}{\partial u}+\frac{n}{y}\frac{\partial Y}{\partial v}+\frac{n}{z}\frac{\partial Y}{\partial w}$$
$$=(n-1)\left(u\frac{\partial Y}{\partial u}+v\frac{\partial Y}{\partial v}+w\frac{\partial Y}{\partial w}\right).$$

NOTES AND NEWS.

Editor Slaught attended the International Congress of Mathematicians at Cambridge, England. F.

We learn from *School Mathematics and Science* that Professor J. L. Gilpatrick of Denison University, died recently. Professor Gilpatrick was a subscriber of the MONTHLY from its beginning. F.

Dr. G. E. Wahlen, who has been editing the Department of Number Theory and Diophantine Analysis, will go to Europe on a year's leave of absence. Material for his department should, therefore, be sent to Editor Finkel.